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TRENDS IN FOREIGN AGRICULTURE POLICIES

THE AGRICULTURE OF NICARAGUA

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TRENDS IN FOREIGN AGRICULTURAL POLICIES . . .

By Leslie A. Wheeler*

A large volume of international trade after the war will be an important factor in maintaining the peace. Possible effects of the agricultural policies of foreign governments on international trade are therefore of vital interest in post-war planning. Agriculturists who have been encouraged by their governments to expand production in the interest of the war effort have a strong claim for post-war protection against losses resulting from possible surpluses. Yet price-supporting measures that result in import restrictions or export subsidies have an adverse effect on international trade. The solution of this dilemma will require measures of international cooperation to bring about a controlled expansion of production and trade.

Articles in FOREIGN AGRICULTURE in recent years frequently have reviewed developments with respect to the agricultural policies of foreign countries.[1] With the return of peace, greater attention will be given to these developments. Meanwhile, it is perhaps desirable to consider certain trends in these policies, since they cannot fail to influence the volume of our agricultural exports.

Governmental controls over agricultural production and trade were intensified greatly after 1929 throughout the world. They spread rapidly in response to demands by farmers that their governments take action to protect them from the effects of the depression. The war has further extended governmental intervention designed to obtain from agriculture the largest possible contribution to the war effort. As for the future, certain government commitments have already been made, and indications are that many emergency controls will be maintained after the war.

THE BRITISH EMPIRE

In the United Kingdom, agriculture suffered severely during the 1920's when the Government followed a policy of nonintervention with respect to most commodities. With the enactment of the "Abnormal Importation Act," on November 24, 1931, the British reversed their traditional free-trade policy with respect to essential foodstuffs and embarked upon a series of outright protectionist programs. In 1932, as a result of the Ottawa Conference, preferential treatment was accorded Australia, New Zealand, Canada, Newfoundland, the Union of South Africa, Southern Rhodesia, and India. Subsidies, or other direct price-supporting measures, were inaugurated with respect to domestic production of wheat and other grains, animal products, sugar, hops, and potatoes; and import restrictions were placed on meats and potatoes.

As a war development, the United Kingdom has adopted what is virtually a system of state trading, with monopoly buying and selling through the Ministry of Food, the Ministry of Supply, and other institutions, staffed in part by former importers and exporters. The suggestion that this governmental-purchase activity be continued in the post-war period has received wide backing, including support by the National Farmer's Union and the Conservative Party. The fact now seems clear that after the war the British Government will continue, temporarily at least, its state-purchasing monopoly,

* Director, Foreign Agricultural Relations.

[1] See FOREIGN AGRICULTURE for February 1939, pp. [45]-83; November 1939, pp. 501-508; January 1941, pp. 3-12; May 1941, pp. 175-192; and January 1942, pp. 15-32.

and certain wartime functions of the Ministry of Food and the Ministry of Supply may be carried on permanently. In fact, bilateral purchase agreements with Canada, New Zealand, and Iraq have already been negotiated. The United Kingdom has agreed to buy certain Canadian meat, dairy, poultry, and timber products, giving assurances as to quantity and price well into the post-war period. The British agreement with New Zealand involves the purchase of exportable supplies of certain meat and dairy products until 1948. Similar negotiations with Australia are now under way. Recently Iraq granted an export monopoly for 3 years on Iraq dates to an English company that is acting as the agent of the British Ministry of Food.

Moreover, Prime Minister Churchill is committed to a post-war price-supporting policy for domestic producers in the United Kingdom. He has declared -

> . . . if the expansion and improvement of British agriculture is to be maintained, as it must be maintained, and a reasonable level of prices is to be maintained, as it must be maintained, there are likely to be substantial charges which the State must be prepared to shoulder.[2]

In 1930 the Canadian Government took over the direction of the Wheat Pool's Central Selling Agency, from which developed the Canadian Wheat Board, which includes representatives of growers, millers, consumers, and the Government. The Board has the power to control wheat imports and exports. Since September 1943 it has functioned as the sole purchaser of wheat from producers. At that time the wheat which had previously been purchased and was owned by the Board was designated as "Crown" or Class I wheat, and purchases of the 1943 and 1944 crops at the new fixed prices were set aside as Class II or commercial wheat, which carried participation certificates. Producers are to receive any benefits arising from the sale of such wheat above the guaranteed minimum prices. At present the Wheat Board distinguishes between the customers receiving the two classes of wheat; the so-called Crown wheat is to be used as long as it lasts for domestic requirements in Canada and for export to countries receiving mutual aid from Canada, and Class II wheat, that is, wheat from the 1943 crop, is being sold to the United States and other commercial-area countries at general market prices, which are currently in excess of the guaranteed minimum level.

A continuation of farm assistance after the war is planned for Canada. Last December the Prime Minister stated that "as an essential part of its post-war policy, the Government intends to ask Parliament at the next session, to place a floor under the prices of the main farm commodities."[3] Subsequently, on July 31, of this year, the Canadian House of Commons passed the Agricultural Prices Support Bill, which the Prime Minister earlier had introduced into Parliament. This new measure provides for the support of prices of all agricultural products except wheat, which is covered by other legislation. It authorizes a three-man Board to support prices either by purchase and subsequent resale, or by making deficiency payments to make up the difference between average market prices and established floor prices. The Act prescribes no specific formula for determining the level at which floor prices are to be established but merely directs the Board to endeavor "to assure adequate and stable returns for agriculture by promoting orderly adjustments from war to peace conditions" and "to secure a fair relationship between the returns from agriculture and those from other occupations."

For some years New Zealand has had a comprehensive program for guaranteeing prices of export staples. For example, since 1936 the New Zealand Government has been the sole purchaser for export of domestically produced dairy products. It has purchased at fixed prices and resold abroad at prevailing market prices. The only wartime variation has been the resale to the United Kingdom exclusively at a negotiated price.

[2] CHURCHILL, WINSTON. Broadcast on March 21, 1943. United Nations Rev. 3: 150-153. 1943.

[3] KING, W. L. MACKENZIE. THE BATTLE AGAINST INFLATION. Broadcast from Ottawa, December 4, 1943.

In Australia the Government has maintained a two-price system for certain commodities under which the price of quantities marketed for domestic consumption are maintained either by limiting these quantities or by subsidizing exports. Wheat in the form of flour is sold in the home market at a regulated price, whereas wheat and flour are sold in the foreign market for what they will bring. In the case of dairy products and dried fruit, the amounts that may be marketed domestically are limited.

LATIN AMERICA

Since 1933 the Argentine Government has pursued a policy of buying wheat, linseed, and corn at fixed prices and selling in the world market at prevailing prices. The Grain Board, established in 1933 to handle such transactions, was particularly active during the depression years of the 1930's and during the war has extended its operations to become the sole purchaser of certain Argentine grains. Corn producers, however, are still free to sell in the domestic market or to deliver to the Grain Board at guaranteed minimum prices. Since the guaranteed prices have been relatively low, the effect on international trade has been rather limited and indirect.

After experiments with State and partial Federal control, the Federal Government of Brazil in 1933 took over complete control of coffee exportation. Also, in recent years the Brazilian Government has had in effect a program of nonrecourse loans in cotton. As a wartime measure, Brazil has sharply stimulated food production, particularly in view of the food-deficit position of certain areas.

In 1930 Chile set up the Agricultural Export Board to control not only exports but also prices to producers of such items as barley, wheat, flour, beans, peas, lentils, and fruit. In 1932 the Commissariat General of Subsistence and Prices was formed to control domestic distribution of food and other items. In 1939 Chile established the Corporation for the Promotion of Production to initiate policies to increase production and raise the standard of living.

In Mexico, governmental controls over agriculture have taken the form largely of redistribution of land, price control, and plans to increase agricultural production. Early in 1941 food prices began to rise rapidly, and in the summer of that year the Government created and granted considerable power to the *Nacional Distribuidora y Reguladora, S. A. de C. V.* This agency has been active during the war in controlling imports, exports, and price levels to producers and consumers.

OTHER COUNTRIES

The Soviet Union exercises state control over agriculture with the object of expanding production. In the early 1930's this control was strengthened through the pooling of small peasant holdings into large collective farms, the establishment of large state-owned farms, and the development of more than 6,000 machine-tractor stations to serve the collective farms. Each season a Plan for agricultural production is developed, with national, regional, and local phases. There is no indication that the character of Soviet control over agriculture will be greatly changed after the war.

Prior to the war extensive controls over agriculture were adopted by Germany, Italy, France, the Netherlands, Czechoslovakia, Switzerland, and other food-deficit countries of continental Europe. They included high tariffs, quantitative limitation of imports, government import monopolies, and other obstructive forms of governmental intervention affecting trade. During the war, such controls have been extended and made much more stringent. It is too early to predict the post-war pattern of Europe, but the food situation for some time will require close governmental regulation.

In 1940 China established the National Food Control Administration and in 1941 formed a system of provincial and county food-control bureaus under the Ministry of

Food. Governmental controls are, nevertheless, not highly developed. After the war increased Governmental direction of and assistance to agriculture seem probable.

SIGNIFICANCE OF THESE DEVELOPMENTS

This review indicates that government assistance to agriculture is widespread and varied in form. It consists largely of direct or indirect price-supporting programs that usually take the form of governmental purchasing and selling monopolies, governmental nonrecourse loans, direct subsidies to domestic producers, export subsidies, import restrictions, or some combination of these practices.

Governments have heavy responsibilities with respect to agriculture. During the war they have forced farmers to change their production pattern to meet requirements resulting from the cutting off of normal sources of supply. In the United Kingdom and Europe an enormous increase in direct food crops has been obtained at the expense of fodder crops. In the Western Hemisphere, on the other hand, the increase has been in animal proteins and fats and oils. Changes from pre-war production patterns have thus been great, and adjustments to post-war conditions will be difficult.

The difficulties experienced by agriculture after the last war, when some governments withdrew their wartime supports, are well remembered. Governmental commitments have already been made, extending into the post-war period, to protect agriculture against the recurrence of a similar collapse in the prices of farm products.

It may be assumed, therefore, that after the war governmental intervention in favor of agriculture will continue throughout the world. What significance will this have in relation to the widely held hopes for liberal trade policies and the expansion of international trade? What significance will it have in relation to hopes for the improvement of living standards throughout the world as envisaged at the Hot Springs Conference on Food and Agriculture?

There is considerable discussion of the importance, in the interest of world peace and prosperity, of bringing about a large expansion in international trade after the war. This presumably would include agricultural products. Such an expansion, it is argued, must involve a substantial reduction in international trade barriers.

The importance of bringing about a general expansion in world trade is recognized, provided such expansion is based on a better utilization of the more economical sources of supply. The existence of the various forms of government intervention in behalf of agriculture, however, poses a serious question. In private-enterprise countries, for instance, a reduction in trade barriers involves the relaxation in national import tariffs and quantitative import restrictions. Agricultural price-supporting programs, however, operate in precisely the opposite direction. Where price-supporting programs in any country involve prices above the world level, the programs cannot be maintained domestically unless import restrictions are imposed; and agricultural surpluses cannot be exported unless a two-price system or export subsidies are employed.

Higher standards of living throughout the world will not result if importing countries generally adopt price- or income-supporting programs as a means of bringing about self-sufficiency, irrespective of relative costs of production. Similarly, governments in exporting countries may cause or maintain an uneconomic expansion in production unless price-supporting programs relate only to a limited production. In other words, the desired expansion of consumption cannot be achieved unless positive steps of international collaboration are taken to bring about a controlled expansion of production and trade and to eliminate the restrictive tendencies inherent in most national agricultural programs.

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THE AGRICULTURE OF NICARAGUA . . . . .

By Kathryn H. Wylie*

Nicaragua's east-coast rubber resources and its increased production of sesame for oil furnish much-needed wartime materials. The pattern of agricultural production, however, remains as it was before the war - with small-scale farming for subsistence crops and concentration on one or two cash crops for export. Coffee and, until recently, bananas have been the mainstays of commercial agriculture. Although coffee probably will remain important after the war is over, the development of complementary products for trade with the United States promises an opportunity for profitable diversification.

In spite of the rapid increase in the production and export of gold, Nicaragua still depends on agriculture to provide a living for four-fifths of its people, and the Government looks to it as an important source of revenue. Soils that support the growth of coffee, food crops, fibers, forest products, and pastures are an important resource. Fully half the net wealth of the nation is represented by agriculture and livestock and another 15 percent by forests and lumbering equipment.

PHYSICAL AND ECONOMIC CHARACTERISTICS AFFECTING AGRICULTURE

Geography

The Republic of Nicaragua is the largest of the Central American countries with an approximate area of 58,000 square miles, including the area in lakes. (See fig. 1.) Honduras lies to the north; the Caribbean Sea forms the eastern boundary, Costa Rica the southern, and the Pacific Ocean the western boundary. Two mountain ranges cross the country from southeast to northwest, the subsidiary range paralleling the Pacific coast and the main or central range extending north to join the highlands of Honduras. Between the two ranges are extensive plains and Nicaragua's two fresh-water lakes - Managua (or Xolotlán, the original Indian name) and Nicaragua (or Cocibolca) - connected by a 15-mile river, the Tipitapa. A series of plateaus descends gradually from the main Cordillera to the Caribbean coastal plain. More than half the total area of the country is east of the main Cordillera, although the majority of the people and a great part of the agriculture are concentrated to the west of this range.

The San Juan, generally considered Nicaragua's most important river, connects Lake Nicaragua with the Caribbean Sea and provides water transportation from the latter to within about 15 miles of the Pacific Ocean. Several surveys have been made looking toward an interoceanic canal across Nicaragua by way of this river and Lake Nicaragua. The Coco or Segovia River, the longest in the country, flows from the eastern crest of the central mountain range to the Caribbean Sea. Other important streams, which also drain the eastern region into the Caribbean, are the Río Grande, the Prinzapolca, the Escondido, and the Punta Gorda Rivers. Most of the rivers on the Pacific side of the mountains drain into the two lakes.

* Office of Foreign Agricultural Relations. This article is based in part on FARRINGER, DALE E. THE AGRICULTURAL ECONOMY OF NICARAGUA. U. S. Cons. Rpt. 38, 70 pp., illus. March 14, 1944. [Hectographed.]

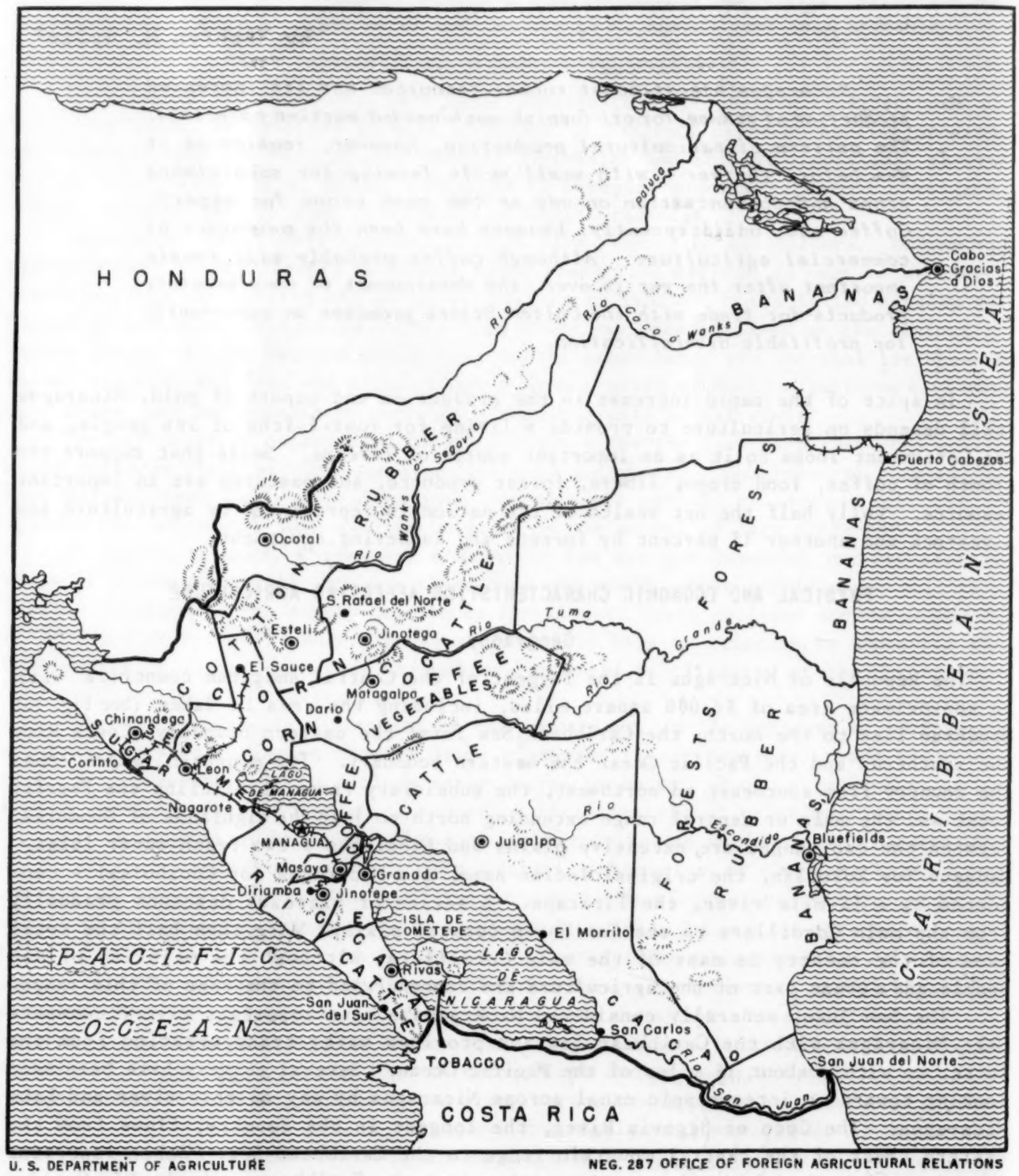

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FIGURE 1.—Map of Nicaragua showing production areas of principal agricultural products.

Climate

As in most tropical countries, altitude is the dominant factor affecting the temperature of Nicaragua. The plains on both coasts are hot, temperatures on the Pacific side averaging 78° F. with extremes of 40° and 95°, and those at Bluefields on

the Caribbean averaging somewhat higher. Temperatures are, of course, lower on the plateaus and in the higher mountain ranges. Rainfall is heaviest on the eastern or Mosquito coast, where precipitation continues almost all the year, although the rainy season for most areas runs only from May to November. Annual rainfall at Bluefields averages 133 inches and at Puerto Cabezas, another Caribbean port, 136 inches. At Granada on Lake Nicaragua, however, rainfall averages 53 inches; at Managua, still farther to the west, only 46 inches; and at Hacienda San Antonio, on the Pacific, 74 inches. During the dry season in western Nicaragua most of the vegetation is parched and dry. There are slightly more than 5,000 acres of land under irrigation, most of it planted to sugarcane. Expanded irrigation works over western Nicaragua could greatly increase the productive area.

Soils

While no extensive soil surveys or soil classifications have been made in Nicaragua, observers say that many of the soils are fertile, particularly in the western coastal area. Soils there are generally light, porous, volcanic ash. They support coffee, corn, sugarcane, sesame, cotton, tobacco, cacao, and feedstuffs for dairy cattle. In eastern Nicaragua, extensive lands along the rivers are suited to the production of derris, abacá, and spice plants; the alluvial "vega" lands that adjoin the rivers grow subsistence food products for the forest workers.

People and Labor Supply

More than half of Nicaragua's one million people[1] live west of the principal mountain range. Mestizos (persons of mixed Spanish and Indian blood) predominate, but the sparse population of the eastern coast is composed largely of Negroes. Farming is the principal occupation, and the population is overwhelmingly rural. The capital, Managua, is the only city with more than 100,000 inhabitants.

Before the present war, the labor supply was adequate for the existing level of agricultural production, although Negroes from the West Indies sometimes were drawn in to help in the banana fields of the east coast. Because of the increased demand for rubber, the number of rubber tappers on the east coast increased from 300 in August 1942 to 7,000 in December 1943. While there is no actual labor shortage now, the wage scale is increasing, partly because of competition for labor with highway construction, and farmers have difficulty in securing labor during the harvesting period.

Transportation

The meager transportation facilities within Nicaragua are inadequate for expanded agricultural production. Except for a few weeks during the dry season, the only means of cross-country transportation from one coast to the other are airplanes and the inland waterway through Lake Nicaragua and down the San Juan River. The limited communication between the eastern and western parts of the country has accentuated the wide divergence in the economies of the two regions.

With the exception of short railway lines, which formerly serviced the banana zones, and air service, the only transportation facilities in eastern Nicaragua are navigable rivers emptying into the Caribbean. Frequently the mouths of these streams are blocked by sand bars, prohibiting the entry of large vessels. Mahogany, pine, and other timber are floated down these streams. Western Nicaragua is served by El Ferrocarril del Pacífico, which extends from the lake port of Granada to the Pacific

[1] Dirección General de Estadística. Gráficos estadísticos de Nicaragua. 45 pp., illus. Managua. 1941.

port of Corinto, with branch lines into the coffee country and other agricultural producing zones.

Although progress in highway construction has been made in recent years, few all-weather roads are yet available. Work on the Inter-American Highway has been emphasized, but feeder roads and a cross-country road to connect the two coasts are planned or already under construction. Oxcart and foot trails, together with the few highways in western Nicaragua, constitute the principal routes over which produce reaches the railway. Even trails are few, however, east of the central Cordillera.

Airfields are now being built in many otherwise inaccessible places, particularly in the eastern rubber zones, so that planes can aid in transporting complementary products.

The principal seaports on the Pacific coast are Corinto and San Juan del Sur; on the Caribbean Sea, Puerto Cabezas and Bluefields.

DEVELOPMENT AND PRESENT STATUS OF AGRICULTURE

Since colonial days Nicaragua has been principally an agricultural country. Although gold mining is becoming increasingly important and during the past few years has furnished the export of highest value, agriculture still holds first place in the economy.

Organization of the Industry

While agriculture is predominant, and the possibilities for production are great, not more than 5 percent of Nicaragua's land area is under cultivation; and less than 10 percent is used for agriculture and livestock. Estimates of land utilization in 1928[2] were as follows:

	PERCENTAGE OF TOTAL LAND USE
Utilized for crops	3.3
Utilized for grazing	2.0
In merchantable timber	33.3
Other cultivable land	28.0
Waste land	33.4
	100.0

Methods of production for many crops are somewhat antiquated. With the exception of the banana fields on the east coast, farmers generally cultivate their land with the aid of ox power and hand tools. Implements and machinery imported from the United States are, however, gradually changing the system of production, but lack of transportation and other factors have hindered the spread of improved methods. The use of fertilizer is limited, and little effort has been made to improve seed stocks either by importing high-grade qualities or through hybridization. Sufficient storage space for carrying staple foods from one season to another is also lacking.

Western Nicaragua is dry during 6 months of the year, but with irrigation the growing season could be extended. Portions of eastern Nicaragua suffer from lack of drainage facilities. Much of this eastern area is nationally owned and available for purchase or lease. Numerous squatters cultivate land on both government property and privately owned plantations. They move about from place to place and constitute a floating agricultural labor supply. Large companies own thousands of acres of banana, timber, coffee, sugar, and grazing lands, which they farm with hired labor, although there are also many small landowners.

[2] CUMBERLAND, W. W. NICARAGUA, AN ECONOMIC AND FINANCIAL SURVEY. 178 pp., illus. Washington, [D. C.] 1928. See p. 9.

Crop Pattern

Coffee is by far the most important commerical crop of Nicaragua and even under present conditions accounts for more than one-fifth of the value of all exports. Before gold became the major export, coffee made up 50 percent of total value. Until recently bananas ranked second in export value, but sigatoka and the Panama disease have practically eliminated commercial banana production. Staple foods are corn, beans, rice, and sugar. (For estimates of the acreage and production of principal agricultural commodities in 1943-44, see table 1.)

TABLE 1.—*Estimated acreage and production of principal crops in Nicaragua, 1943-44*

COMMODITY	ACREAGE	PRODUCTION	COMMODITY	ACREAGE	PRODUCTION
	Acres	*1,000 pounds*		*Acres*	*1,000 pounds*
Corn[1]	110,000	150,000	Sugar[4]	8,000	32,000
Beans[2]	90,770	59,000	Cotton[5]	3,273	655
Coffee	73,000	31,000	Cacao	750	750
Rice[3]	60,000	45,000	Tobacco[6]	325	365
Sesame	19,000	7,500	Castor beans	300	156
Sorghum	12,850	18,000	Peanuts	100	110
Total				378,368	344,536

[1] The actual acreage is probably smaller than indicated, since the second corn crop is often planted on the same ground as the first.

[2] Actual acreage is probably smaller than indicated, since the second bean crop is often planted on the same ground as the first.

[3] Milled rice.

[4] Figures represent refined sugar only, grown on an acreage smaller than that devoted to the production of a cheaper molasses block known locally as "panela" or "dulce."

[5] Low average yield per acre owing to complete loss of crop in some districts.

[6] Virginia-type tobacco only. Acreage of "Chilcagre" and "Jalapa" tobaccos roughly calculated at an additional 425 acres, making a total of 750 acres for the entire country.

FARRINGER, DALE E. THE AGRICULTURAL ECONOMY OF NICARAGUA. U. S. Cons. Rpt. No. 38. 70 pp., illus. March 14, 1944.

Export Crops

Coffee

More people in Nicaragua depend on coffee for their livelihood than on any other one commodity. About 75 percent of the coffee is grown in the Sierra and Carazo region south of Managua, and about 20 percent comes from the Matagalpa-Jinotega-Nuevo Segovia region north of Managua. While there are no official government statistics, estimates place the number of trees at 30,000,000 and the growing area at 73,000 acres. Most of the coffee is grown on large plantations, although there are many coffee holdings rented or owned by small farmers. Production has fluctuated during the past 30 years with a peak of 44,000,000 pounds in 1934-35. By 1943-44 production had dropped to 31,000,000 pounds, and the estimate for 1944-45 shows a further decline. Reduced yields together with increased production costs do not offer bright prospects for the industry.

Most of the coffee is produced for the export market. (See table 2.) Before the war it went largely to Europe - Germany, France, and Great Britain. Since 1941,

however, it has gone to the United States. Exports are now controlled by quotas established under the Inter-American Coffee Agreement. The quota for the United States market for the year 1943-44 (October 1 through September 30) was fixed at 257,053 bags of 60 kilos (132 pounds).

TABLE 2.—*Production and export of coffee from Nicaragua, 1914-43*

PERIOD	PRODUCTION	EXPORTS	
		QUANTITY	PERCENTAGE OF PRODUCTION
	1,000 pounds	*1,000 pounds*	*Percent*
1914-18	24,250	22,028	91
1919-23	28,900	25,753	89
1924-28	36,000	32,871	91
1929-33	32,297	29,201	90
1934-38	36,700	[1] 33,668	92
1939-43	34,500	[1] 32,027	93

[1] 4-year average, 1939-42.

[2] Production data from FARRINGER, DALE E. AGRICULTURAL ECONOMY OF NICARAGUA. U. S. Cons. Rpt. No. 38. 1944. Export data from [NICARAGUA] RECAUDADOR GENERAL DE ADUANAS Y ALTA COMISION. MEMORIA. Managua. [Ann. Rpts.]

Bananas

Bananas were an important export crop during the 1930's, ranking second in value to coffee in most years and jumping to first place in 1932. During the past few years, however, diseases and, in 1942, shipping difficulties have virtually eliminated exports (table 3).

Contrary to the situation in other Central American countries, equipment for irrigation and disease control has not been installed in Nicaragua. Consequently, the industry is not expected to regain its former importance even after the war.

Sesame

Sesame has replaced bananas as the second most important crop cultivated for export. The first substantial plantings were made in 1937, and the industry has grown rapidly ever since. By 1943, 19,000 acres of land were sown to sesame, and production in 1942-43 was estimated at 8,975,000 pounds. Climate and soils are favorable for an even greater expansion in production. Many farmers who formerly grew cotton have put their land into sesame, although the high cost of production during the past few years had been discouraging.

FIGURE 2.—Market scene at Managua.

TABLE 3.—*Exports of bananas from Nicaragua, specified years*

PERIOD	EXPORTS	YEAR	EXPORTS
	1,000 stems[1]		*1,000 stems*[1]
Average:		1939	1,653
1924-28	2,713	1940	1,155
1929-33	3,600	1941	731
1934-38	2,445	1942	82

[1] Estimated weight of 1 stem = 50 pounds.

Sesame seed is grown mostly for export, although Nicaragua imports both edible and inedible vegetable oils. The five small processing plants in the country have a low productive capacity and are unable to process enough seed to furnish the domestic market with oil.

Production is concentrated in the lowlands of western Nicaragua, with about 50 percent in the Department of León and 30 percent in Managua. Planting, cultivating, and harvesting usually are done by hand. Yields of only 300 to 400 pounds an acre, together with high production costs, probably will prevent Nicaragua from competing in world markets when oilseeds are again available from sources cut off by the war. During the war, however, while fats and oils are in such short supply, Nicaraguan sesame is finding a ready market, and exports have increased sharply during the past 2 years.

With the exception of cottonseed, other oilseeds are unimportant in Nicaragua. Only a few peanuts are grown, and they enter directly into consumption rather than being pressed for oil. A few castor beans are grown, most of which are pressed and the oil used in the manufacture of soap.

Cotton

Although cotton has been grown in Nicaragua since before the Conquest, it did not become important in foreign trade until 1936 (table 4).

TABLE 4.—*Exports of ginned cotton from Nicaragua, 1924-43*

PERIOD	EXPORTS	PERIOD	EXPORTS
	Bales of 500 pounds		*Bales of 500 pounds*
Average:			
1924-28	406	1934-38	3,130
1929-33	282	1939-43	5,163

Most of the cotton grown has been for export, and before the present war the principal markets were Germany and Japan. When these markets were closed by the war, unsold cotton stocks began to pile up. An agreement was reached on July 15, 1942, between the Nicaraguan and United States Governments with the following provisions:

(1) The purchase by the United States of part of these stocks (including some cotton from both the 1941 and 1942 crops) through the Commodity Credit Corporation, with offerings at a fixed price from the crops of succeeding years during the war.

(2) Limitation of the acreage planted to cotton to a total of 3,000 manzanas (5,189 acres).

The lowlands of western Nicaragua are the principal producing areas, particularly the Departments of León and Chinandega. Production has dropped off drastically during the past 2 years, from 2,000,000 pounds in 1942-43, to 655,000 pounds in 1943-44. In addition to a cut of about 50 percent in acreage planted, the midsummer drought and the "picudo" boll weevil reduced yields. Cotton usually is planted in July and harvested during the following January and February.

The only mill in Nicaragua that spun and wove cotton before 1944 used about 400,000 pounds yearly. A new mill on the outskirts of Managua, scheduled to open early in 1944, was expected to double the country's cotton-milling capacity.

After the purchasing agreement with the United States was signed, many farmers switched from cotton to sesame, but some of them are beginning to turn again to cotton. The cotton acreage is therefore expected to increase in 1944-45.

As in the case of cotton fiber, exports of cottonseed found a market in Germany and Japan during late 1930's. Before 1936 little seed was exported, and, in fact, little was used in Nicaragua. Many times it was burned, or otherwise destroyed, and sometimes it was fed to livestock. With no cotton-oil presses in the country to provide much-needed vegetable oil, the export market was the most promising outlet for the seed. Exports have recently dropped off, however, and post-war prospects are not bright.

TABLE 5.—*Exports of cottonseed from Nicaragua, 1936-42*

YEAR	EXPORTS	YEAR	EXPORTS
	1,000 pounds		*1,000 pounds*
1936	449	1939	4,144
1937	5,432	1940	2,695
1938	5,383	1941	2,239
		1942	2,278

Cacao

The national beverage, "tiste," made from freshly ground cacao, toasted corn, sugar, and water, is consumed by all classes of Nicaraguans and is an important article of the diet. Trade in cacao, Nicaragua's most valuable cash crop in colonial days, has declined, however, to a place of relatively minor importance during recent years. Exports during the late 1930's averaged about 300 tons, but from 1939 through 1943 they averaged just over 200 tons. Prospects for 1944 point to shipments about equal in volume to this recent average. The quality of the cacao crop of the Department of Rivas (the narrow stretch of land between Lake Nicaragua and the Pacific Ocean) is, however, quite high. Neither witches'-broom nor the monilia pod-rot disease has occurred there. If a program of plant improvement and expanded production were undertaken, cacao might return to a prominent place in Nicaragua's agriculture.

Staple food crops

The staple food crops - corn, beans, and rice - are usually grown in sufficient quantities for local use, as is sugar (table 6). Small imports are made into the east-coast consuming area, and small exports are made from the producing area in western Nicaragua to neighboring countries. During 1943 more than the usual amount of corn was exported, largely to Mexico. Any shortage in food products is usually of the processed or semiprocessed items, the principal one being wheat flour. Imports of flour from 1936 through 1940 averaged 8,450,000 pounds and are expected to be even higher for 1944.

TABLE 6.—*Production of principal food crops in Nicaragua, pre-war average, 1940-41, and 1942-43*

PRODUCT	UNIT	PRODUCTION		
		PRE-WAR AVERAGE[1]	1940-41	1942-43
Corn	1,000 bushels	656	—	—
Beans	100-pound bags	21,737	—	100,000
Rice, cleaned	1,000 pounds	54,434	44,665	[2]45,000
Sugar, white	Short tons	8,035	10,003	13,500

[1] Averages are not exactly comparable owing to fragmentary nature of statistics available.

[2] Estimated.

Corn is the principal food of 80 percent of the people. Production supplies domestic needs and during the 1920's and 1930's furnished exports to neighboring republics. Exports fell off, however, in 1936 and did not become important again until recently.

Corn production follows the population distribution, with the largest acreage in the west-coast Departments of León, Chinandega, and Managua. Two crops are grown in a year, the first being planted in May and harvested in August and the second planted in September and harvested in December or January. Most of the corn is produced by the small farmer and his family, and only an insignificant part of the corn land is plowed or cultivated with machinery.

Rice and beans are also important foodstuffs, but they are not consumed in such large quantities as corn. Until the past few years rice was imported, largely from the United States, but such imports have declined, and exports during the past 2 years have greatly exceeded imports. Rice production has been encouraged and is expected to increase, particularly on the east coast, where the National Bank of Nicaragua has extended loans to small farmers and self-sufficiency appears likely to be attained.

The rice acreage centers around the cities of Managua, Masaya, and Jinotepe. Smaller areas are under cultivation in the central uplands and along the rivers of the east coast. In the principal producing areas rice is planted in June and harvested during the following January. Only a few operators use modern equipment. Most of the land is tilled with wooden plows or hand tools; the rice is cut with a machete and threshed by hand over tables made of slats.

Only small amounts of beans enter foreign trade, although they are produced in sufficient volume to meet local needs in western Nicaragua. Small quantities of beans are sent to neighboring countries from time to time, and imports into the deficit east-coast area have declined steadily.

Like corn, bean production follows the pattern of population. Two plantings are made each year, the first in May or June and the second in August or September. A few large-scale farmers produce beans, but the greater part of the crop is grown on small farms.

Before and during the first world war sugar exports from Nicaragua to the United States were large. They declined during the 1930's and have been of minor value in recent years. Sugar production and refining constitute, however, one of the large industries of western Nicaragua. In addition to small mills producing panela (brown loaf sugar used by the poorer classes), there are 22 refineries producing white sugar, including the largest sugar mill in Central America. Approximately 70 percent of the refined sugar is produced in the Department of Chinandega, with the remainder supplied largely by the Departments of Managua, León, Rivas, and Granada.

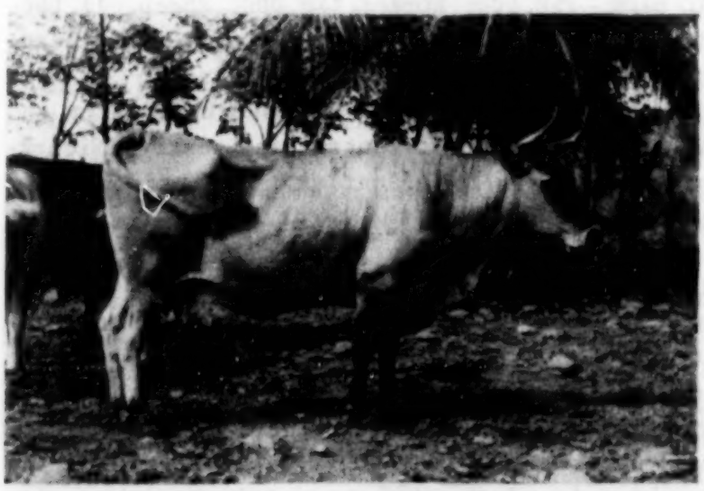

FIGURE 3.—*Criollo* or native-type cow.

Although sugar is exported from the west coast, small amounts are also imported into eastern ports. Because of inadequate transportation between growing sections and deficit areas in both Honduras and Nicaragua, sugar is shipped from Nicaragua's western growing region to consuming centers in western Honduras, and from growing areas in eastern Honduras to consuming centers on Nicaragua's east coast.

The production of grain sorghum, a seed similar to white kafircorn, is estimated at about 18,000,000 pounds. It is used by the Nicaraguans as a food, especially in the uplands. Although the grain is sometimes fed to poultry and animals, the crop is also utilized as forage by many dairymen. It is produced throughout the western and central parts of the country largely for the home market, little being exported. Sorghum is usually planted before the October rains and harvested in December and January.

Tobacco

Perhaps tobacco's most important contribution to the Nicaraguan economy is the revenue it provides for the Government. Stamp taxes on sales of cigarettes, fees charged on acreage planted to tobacco, a miscellaneous invoice tax, and import duties on leaf make a significant contribution to the cash receipts of the Nicaraguan Government. The tobacco acreage totals only about 750 acres, the greater part of which is in the Department of Masaya and on the island of Ometepe in Lake Nicaragua. Most of the tobacco grown is Virginia and Chilcagre. The entire production is utilized by the domestic cigar and cigarette industry. In addition to the 800,000-pound crop of leaf produced in Nicaragua, 363,000 pounds were imported in 1943. Production has been relatively constant in recent years, but the cigar and cigarette industry has been expanding, making increased imports of leaf necessary. Annual imports, largely of Virginia and burley tobaccos from the United States, averaged 70,000 pounds during the 5-year period 1929-33, 164,000 during 1934-38, and 251,000 pounds during 1939-43.

The Livestock Industry

Nicaragua has a valuable livestock industry, and it offers one of the most promising fields for expansion. Cattle are the most important of the livestock, although hogs do well, and poultry are kept throughout the country. In 1940 cattle numbers were estimated at 700,000 head; pigs, 250,000; horses, 150,000; sheep, 15,000; and goats, 5,000. More recent estimates place the cattle population at 800,000 head. Varying numbers are exported each year to other Latin American countries.

The Government long ago recognized the value of a sound livestock industry and has encouraged its development. Cattle extend throughout central and western Nicaragua from Chontales to the Honduran boundary. *Criollo* or native types predominate, although imported breeding stock is gradually improving the herds. (See fig. 3.) While a dairy industry is being developed around the larger cities, most of the animals are used for meat, milk, and work, with little specialization for any one purpose. The tropical plains of Chinandega, León, Managua, and Rivas are the principal dairy regions, although the pastures of Chontales, Matagalpa, and Esteli farther inland are developing some dairy herds.

As is common in most Latin American countries, Nicaraguan cattle are more dependent upon grass for feed than upon grain or other supplementary feedstuffs. During the dry season, however, the pastures have little to offer, and during the rainy season the grass soon becomes so tough and coarse that it loses its palatability and much of its nutritive value.

As with feeding, breeding and herd management in Nicaragua do not always follow the most modern practices, although improvements are gradually being made. Other handicaps to be overcome are cattle diseases and pests, particularly mastitis, Bang's disease, and the fever tick. Calf mortality is high, sometimes averaging more than 20 percent of the calves born.

About 100,000 head of cattle are slaughtered each year to provide meat, and, in addition, small quantities of preserved meat are imported. Such imports were consumed largely on the east coast, and since the decline of the banana industry the demand for them has dropped off also (table 7).

TABLE 7.—*Net trade*[1] *of Nicaragua in livestock and livestock products, 1924-43*

PERIOD	CATTLE[2]	CHEESE	BUTTER	HIDES	MEAT	MILK[3]
	Head	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*	*1,000 pounds*
Average:						
1924-28	5	-28	-80	726	-344	-334
1929-33	207	151	-41	383	-185	-266
1934-38	1,760	59	19	272	- 68	-153
1939-43	6,588	11	- 4	174	- 70	-223

[1] Minus sign indicates net imports.

[2] Data do not include some border trade with Costa Rica and Honduras.

[3] Condensed and powdered milk included.

Few farmers concentrate on good-quality beef animals but produce a dual-purpose type that is not particularly good for beef. A law prohibits the slaughtering of calves; consequently, no veal is produced in Nicaragua.

While milk production is an established farm enterprise, dairying is not yet a specialized industry. The greatest emphasis on dairying so far has been in the tropical west-coast areas, but possibilities are good for its development in the central highlands. Milk production is estimated at about 450,000 pounds a day, about a third of which is consumed as fluid milk and the balance made into cheese. Most of the cheese is white (*queso blanco*) and is made on the farm, although a small amount of the yellow cheddar type is manufactured in Managua. Farm-processed cheese usually is made by pouring the fresh warm milk into a wooden vat and adding rennet to produce a curd. The curd is separated from the whey and salted; the resulting cheese is put in molds for a day before being used.[3] Butter making is largely limited to farm production.

The only milk-pasturization plant is in Managua, where about 8,000 quarts of milk are bottled daily. Some cheese and butter are also manufactured there. Throughout the remainder of the country the fresh uncooled milk is transported from the farm to the consumer on the backs of horses or mules. Obviously, there is much room for improvement in the sanitary conditions surrounding the handling of milk in Nicaragua, both as to milking methods and the processing of cheese and butter.

Hogs and poultry are raised for food, and some lard is exported. A few purebred hogs were imported recently as well as baby chicks of the White Leghorn, Plymouth Rock, and Rhode Island Red breeds. Cattle, however, remain the principal livestock on which the Nicaraguans pin their hopes for developing a first-class industry. The Ministry of Agriculture and Labor recently purchased in the United States several registered dairy and beef cattle, which will serve as foundation stock to improve the native breeds. They will be kept at the National School of Agriculture at Chinandega.

[3] DAHLBERG, A. C. AND HODGSON, R. E. THE DAIRY INDUSTRY OF NICARAGUA. U. S. Bur. Dairy Indus. 30 pp. June 1943. (Rpt. based on study made on behalf of Food Supply Division, Office of C. I. A. A.) [Mimeographed.]

Forest Products

The forest resources of Nicaragua are extensive, ranging from rubber and ipecac to pine and mahogany. Estimates of the forest area vary, but one indicates that the forest cover is about 80 percent of the land area. Cumberland's estimate of land utilization in 1928[4] places one-third of the area in merchantable timber (presumably with the transportation and other facilities existing at that time), although much of his "other cultivable land" (28 percent) and "waste land" (33 1/3 percent) may well have included land then in forests.

Most important from the standpoint of the war effort is Nicaragua's rubber resources of the east coast. The eastern forests also furnish balsa, ipecac, and most of the mahogany for export. Pine forests extend from slightly north of the Escondido River to the Honduran border, from 30 to 75 miles inland from the Caribbean coast, as well as in the highland region of north central Nicaragua. Other forest products include lignum vitae, rosewood, dyewoods, cedar, Peru balsam, and nispero gum or chicle (table 8).

TABLE 8.—*Exports of forest products from Nicaragua, 1924-43*

PRODUCT	UNIT	AVERAGE 1924-28	AVERAGE 1929-33	AVERAGE 1934-38	AVERAGE 1939-43
Rubber	1,000 pounds	157	1	174	892
Balsa	1,000 Bd. ft.	30	63	3	42
Mahogany	1,000 Bd. ft.	14,060	2,020	836	2,406
Lignum vitae	1,000 Bd. ft.	924	685	1,246	396
Rosewoods	1,000 Bd. ft.	1,120	704	1,284	1,125
Dyewoods	1,000 Bd. ft.	2,706	2,230	1,688	1,480
Pine	1,000 Bd. ft.	3,061	4,474	5,239	3,778
Cedar	1,000 Bd. ft.	2,974	840	831	1,422
Other woods	1,000 Bd. ft.	228	122	982	971
Peru balsam	1,000 pounds	12	25	38	35
Ipecac	1,000 pounds	0	49	95	64

Rubber

Wild "Castilloa" trees in eastern Nicaragua furnish most of the rubber now produced, although seedlings of *Hevea brasiliensis* are being transplanted from the seedbeds of the experiment station at El Recreo. During the latter part of the nineteenth and early part of the twentieth century rubber exports from Nicaragua averaged about 600,000 pounds a year. They later fell off sharply, and only in the past 2 years have they exceeded this earlier average. The rain forest of the east coast, however, from the Coco River in the north to the San Juan River in the south, contains abundant supplies of the wild product. The heavy demand from the Allied Nations has greatly stimulated the gathering of rubber, and during the past 2 years the expanded industry has absorbed the workers formerly employed in the east-coast banana industry. Until recently one of the handicaps to production on the east coast was the lack of food crops for the workers. Food had to be imported from outside the country or transported from the west coast through Lake Nicaragua and the San Juan River. The production of foodstuffs is increasing, however, to provide for the needs of these workers.

Timber

Mahogany was a valuable timber export from Nicaragua for many years before the depression of the 1930's, and exports are again increasing under wartime demand. Of the two varieties grown in Nicaragua the *Swietenia macrophylla*, growing on the east coast, is more important commercially. Three mills at Bluefields, one at Puerto Cabezas, and one at Granada on Lake Nicaragua prepare the mahogany for export.

[4] See footnote, page 202.

The east-coast pine is somewhat similar to the slash pine (*Pinus caribaea*) of southeastern United States. The pine in the north central highlands is at present of little commercial value because of its inaccessibility to transportation facilities. Pine exports, which have exceeded those of other timbers in volume, go largely to Panama, the Canal Zone, and Costa Rica.

Although balsa has not been exported in large quantities, considerable stands exist on the Caribbean coast and in southern Nicaragua. All the shipments thus far made have been from the Pacific-coast port of Corinto and came from the southern end of Lake Nicaragua near the Costa Rican border.

Exports of lignum vitae, which formerly went to Japan and Germany, have fallen off since the war began. This wood is particularly valuable for bearing or bushing blocks of steamship propeller shafts. Nicaraguan rosewood from the west coast goes to the United States for such purposes as knife and tool handles, ornamental boxes, and inlay work.

Of the dyewoods found in the lowlands of Nicaragua, the most important commercially are the "Brazil," supplying red dye, and "Mora," yielding fustic. Exports of both these dyewoods have declined recently.

Other forest products include balsam of Peru, obtained from the tree *Myroxylon pereirae*, found in western Nicaragua; ipecac, the roots of which small shrub are used in medical preparations, particularly for the treatment of amoebic dysentery; and nispero gum or chicle, which is the base of chewing gum. Exports of chicle have been made in the past 4 years only. They, as well as most of the Peru balsam exported, have gone to the United States.

GOVERNMENT POLICIES AFFECTING AGRICULTURE

The Ministry of Agriculture and Labor established in 1928 has maintained agricultural inspectors throughout most of the Departments of Nicaragua to keep in touch with the farmers' needs. Further assistance was assured in 1930, when the *Escuela Nacional de Agricultura* was set up at Chinandega to teach agricultural students, and the *Banco Hipotecario de Nicaragua* was incorporated to make long-term loans to farmers. The *Centro Experimental Agrícola de Masatepe*, located near Masatepe, also is designed to improve the country's agriculture.

The most direct aid extended by the Nicaraguan Government to encourage agricultural development has been through the loans of both the Banco Nacional, which has branches in all the important towns and cities, and the Banco Hipotecario. The Government has stimulated the production of food crops, and of sesame, through bank loans. During 1943, 95 percent of the sesame acreage was under loan from the National Bank.

The Government also cooperated with the Institute of Inter-American Affairs in its program to increase food production, particularly on the east coast. The program was designed primarily to produce food for the rubber gatherers, although it also included projects in other areas as well as the establishment of a center to train boys in agriculture. The program, which terminated on January 15, 1944, had succeeded in increasing food production in that area to some extent and had provided for small quantities to be stored.

A cooperative agricultural experiment station, established jointly by Nicaragua and the United States under an agreement dated July 15, 1942, will provide the nucleus around which the agricultural development in the east coast probably will take place. It will also aid the farmers of the west coast and in the interior, probably through substations. The station located at El Recreo in the Escondido River Valley, will be

concerned primarily with the production of complementary crops for export - rotenone-bearing plants, fibers, spices, oil palms, and rubber - although it will encourage farmers to meet their own food needs from local production.

THE EFFECT OF THE WAR ON NICARAGUAN AGRICULTURE

The war has had little effect on the agricultural pattern and the trend of production in Nicaragua. It has stimulated production of foodstuffs, however; has accelerated a shift from cotton to sesame in western Nicaragua; and has hastened the elimination of the banana industry. Production of the major foodstuffs remains much the same as before the war, although there has been a marked increase of food production on the east coast and some expansion in rice production.

While exports of coffee before the war went mainly to Europe, the United States now takes most of these exports under quotas established by the Inter-American Coffee Agreement, and stocks have not accumulated. Higher costs of production may be traced directly to war influences, but the decline in the production of coffee during the past few years is a continuation of a trend rather than a wartime development.

Partly because of the war, the banana industry of the east coast has been wiped out, at least temporarily, although the Panama disease was the initial influence, and the sigatoka leaf-spot disease, which attacked the plantations several years ago, was a major cause. As a result of the war, however, spraying equipment and copper-sulfate solution for the control of sigatoka could not be obtained, and most plantations were allowed to go back to jungle.

When the war closed the German and Japanese markets for cotton, farmers began to shift from cotton to sesame-seed production. Because of the wartime demand for oilseeds, the Nicaraguan Government encouraged farmers to plant sesame through loans from the National Bank.

It is on forest products, particularly rubber, however, that the war has had its greatest influence. Cuttings of timber, especially mahogany, pine, and balsa, are increasing under wartime stimulus, and rubber harvesting from the wild Castilloa trees has multiplied many times. Even in the new cooperative experiment station at El Recreo the major emphasis on expanded production is on rubber, although seeds and cuttings being planted include other tree products, such as the African oil palm, tropical fruits, and hardwoods.

Another development affecting agriculture, livestock, and forestry that has received additional impetus during the war years is highway construction. The extension of the Pan American Highway and the building of proposed feeder roads are expected to open new areas for agricultural use.

The principal post-war problems of Nicaragua, however, will be those existing before the war - lack of adequate transportation and storage facilities, unimproved agricultural methods, and the low standard of living. Added to these will be problems arising out of the reentry of the Far East into the world supply picture for rubber and oilseeds.

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